Case Studies

Case Study 1: Arizona Health-e Connection Case Study

Funding for the Arizona Health-*e* Connection should be obtained from a variety of sources. The *Roadmap* recommends that different funding programs and parameters be considered for HIE, HIT, and a central coordination organization. It is not necessary to invest large amounts of capital in a central organization to create a top-down funding structure for all Health-*e* Connection exchange activities.

Principles for Financing

- Many projects should be funded on a case-by-case basis at an Medical Trade Area (MTA) level
- Costs for ongoing operations should be borne by the organization(s) benefiting from the service.
- Funding sources for this function could include grants and donations, state funds, in-kind donations of staff, and various transaction fees.
- Ongoing operational funding for a regional organization is obtained from a results delivery service via a self-funding model.
- Most HIT costs should be absorbed by the organization that is the primary user of the HIT system. In fact, many Arizona clinicians have already invested in such systems. A possible approach for clinicians who cannot afford a full EMR system is to offer a subset of those services through a Web-based system.
- Many projects will be funded on a case-by-case basis at a medical trading area level.
- Start-up funding efforts and possible sources for these regional HIE projects could be facilitated by the statewide organization to gain efficiency.
- Ongoing operational funding for the core MTA functions and central coordination organization applications be value driven, so that costs for ongoing operations are primarily borne by the organization(s) receiving benefit from the service.
- Projects will be addressed when it makes economic sense to do so.
- A principal aim of the Arizona Health-*e* Connection is to create a sustainable business model with users paying for the products and services that they receive.
- Complementary service revenues will offset the increased costs as project grows

A. Central Coordination Organization

A modest budget is recommended for the central organization to coordinate, facilitate, and standardize statewide efforts. As defined in the recommended governance structure for the Arizona Health-*e* Connection, the central organization is relatively small. It will provide staffing, implementation, and support for projects and services that benefit all organizations, making it difficult to assign value to specific organizations.

Since activities of the central organization are designed to promote the common good, funding should be obtained from a central source or sources. Options could include grants and donations, state funds, in-kind donations of staff, and transaction fees. Items such as a secure network, secure messaging, Web portal, clinician directory, and the patient health summary application should be funded centrally. The approximate annual amount of central coordination organization funding required is $3 million to $4 million.

B. Health Information Exchange

The first key HIE service to establish a funding stream is a medical trading area-wide results delivery service, which provides physicians with a single source to order clinical services, generate and confirm referrals, and receive clinical results. The clinical messaging service delivers clinical reports to the treating providers electronically, thereby reducing costs for the healthcare data provider and improving efficiency and utility for the recipient. This service is envisioned to a) be free of charge for the ordering physician and the "copy to" physician, and b) require the organization receiving the order and sending the result to pay the bulk of the costs to the MTA utility on a monthly basis for the service its receives. It is assumed that when the service is completely operational that the current more manual, less reliable results delivery and order processes would be discontinued and that the costs associated with them would be reduced or eliminated.

It is further assumed that service levels would noticeably improve for customers and their patients. The healthcare data providers send clinical reports electronically; the clinical messaging software converts them into a consistent, easy-to-use report format and delivers them to the treating provider. The intent is for new, fee-based services to replace paper-based reports now delivered to physicians by fax, postal mail, or courier. Phone call requests for status tracking information are reduced. Costs to send and receive clinical results are reduced.

Based on cost figures from other results delivery networks, Arizona can anticipate development costs of about $1.5 million to $3 million per one million people (population) over the first two years. The proposed fees generated by the clinical results delivery service are critical to support the ongoing operations of the MTA and provide expansion of additional data-exchange services such as the MTA master patient index and data transformation (normalization). The cost to maintain each results delivery network and provide these expanded data-exchange services is about $2.5 million to $4 million per year per one million people (population), based on figures from other results delivery networks.

Information source providers such as labs, hospital inpatient, outpatient and emergency services records, ambulatory surgery centers, imaging centers, etc., have been identified as beneficiaries of this service. The extent of the benefits and identification of other beneficiaries will be thoroughly studied in future phases of each project. Service fees may be charged to other organizations legally authorized to receive results on behalf of the patient, such as personal health record (PHR) entities, chronic care improvement programs (CCIP), and disease management (DM) organizations in or outside health plans, insurers, employers, and associations. Fees may be generated for these services based on the value of providing daily batches of information about their patients to their systems (PHR, CCIP, DM) on a per-patient basis.

The patient health summary is a special case as it relates to the decision to develop and sponsor the service to clinicians, care coordinators, emergency physicians, and other authorized users. The beneficiaries of this service, if built for the medical trading area or the central coordination organization, are most frequently the patients. It serves patients well in most cases involving their expressed need (a visit or a call) for medical care. Surveys have shown that in most cases, patients would like to have the clinician as fully aware of their previous conditions and clinical findings as possible. Therefore, the patient or the patient's financial sponsor or guarantor should fund the operation of the patient record summary system that provides this service. Thus, the costs of the system that provides the patient health summary, adds new patients, and provides for the addition and maintenance of clinical event reports, orders, prescriptions, and other records, and the record matching and integrity should be paid by those who benefit.

A financing mechanism for such a system includes a wide variety of financing approaches and formulas. An example is one that levies a fee for each person on the database each month and for

the addition of more clinical data and the underlying service support. Thus, a base fee and an index of the degree of value for the additional information for each patient could be charged each month to the guarantor or sponsor of the person/patient. Past proposals have set base fees of between 5 and 10 cents per month, with the index raising the fee to 25 to 50 cents per patient per month at that index level. The proposed strategy to select appropriate early applications that are easy for healthcare providers to use establishes the foundation for building toward a more comprehensive set of functions, thereby facilitating and expediting the transition of patients, providers, and payers to the benefits that HIT and HIE offer in improving health and healthcare delivery in Arizona. HIE projects provide support to HIT EMRs (interfaces), and HIT EMRs and ePrescribing provide support to HIE projects as patient health summaries are exchanged.

C. Health Information Technology

As envisioned in the HIE section, all clinical practices will receive certain free, basic-level HIE services. Some MTA organizations have offered very low threshold entry fees when referrals or secure messaging services were offered ($10 to $25 per clinician per month).

Additional HIT costs should be borne by the organization that is the primary user of any given HIT system. In most cases this will be the clinical practice. Some HIE projects will most likely provide basic HIT extensions to their service offerings to clinicians and other service providers. These extensions can be found in MTAs like HealthBridge and Taconic's MedAllies and includes services such as practice-wide inbox and messaging, referrals, ePrescribing, dictation/transcription, basic charting (forms and templates) or progress notes, patient health summary, and scheduling. These services in many cases are integrated with the HIE software service or interfaced to make it appear seamless. The fees for these services are usually charged as a monthly subscription with transaction modifiers.

Many clinical practices will opt to fund their own deployments of HIT systems. Incentives (such as tax credits, low-cost financing arrangements, and potentially others) should be explored to encourage additional HIT adoption.

An alternative approach for clinical practice will be to purchase, via a subscriber financial model, use of a central system to handle a subset of electronic medical record (EMR) functions. In effect, this is an "EMRlite" offered through a Web-based system. This approach, commonly used for various business applications via the Internet, is also known as an application service provider model (ASP). If this approach were contemplated, collaboration on interface development and maintenance contracts should be considered, because there are considerable cost and time savings.

This approach would also reduce risks of failure from collaboration, interface sharing, or joint development approaches. The central coordination organization or the MTAs could develop and offer EMR-lite functions. It is also believed that certain vendors would be interested in competing for this work, if outsourcing the function is determined to be appropriate. In addition, it is possible that multiple outsource vendors could develop EMR-lite applications and market the service to clinical practices on a case-by-case basis. For this to occur, outsourced vendors must be required to adhere strictly to Arizona Health-*e* Connection interoperability standards. EMR-lite functions could be offered to clinical practices on a tiered cost schedule.

Case Study 2: The Role of the RHIO in the Florida Health Information Network

III. The Role of the RHIO in the Florida Health Information Network

The RHIOs and other health information exchanges play an important role as community "umbrella" organizations that bring health care stakeholders together and as network intermediaries between the providers in the local community and the FHIN. The RHIOs take on the responsibility of bringing providers together for the purpose of sharing health care data and integrating their disparate computer systems into a health care data network that can pass medical records among all participants. RHIOs will serve as medical data "aggregators" for the FHIN, providing access to its master patient index to all patient records accessible from providers participating in the RHIO, and passing along patient records when requested by a provider who is searching for patient records on the FHIN. The function of the RHIO is to work in the local community as a governing body developing common policies, common security and privacy infrastructures and a sustainable business model.

- In Florida, the development of RHIOs accelerated in 2005, with four not-for-profit corporations organizing as RHIOs, all of them working with a core of health care professionals.
- Each RHIO, and other health information exchange projects, will have access to patient records held by providers in each RHIO, via the overarching connection of the FHIN infrastructure.
- An issue of critical importance for RHIOs is the location, accessibility and ownership of medical records. Most providers maintain their own patient records but an orientation toward data-sharing must be fostered by each RHIO.
- The FHIN will provide statewide connectivity, but the RHIOs are responsible for working at the local level with providers, laboratories, radiology labs, clinics and administrators at all levels.
- The RHIOs will work with the FHIN to create a seamless health care information network across the state that is accessible to every provider and benefits all of Florida's citizens.

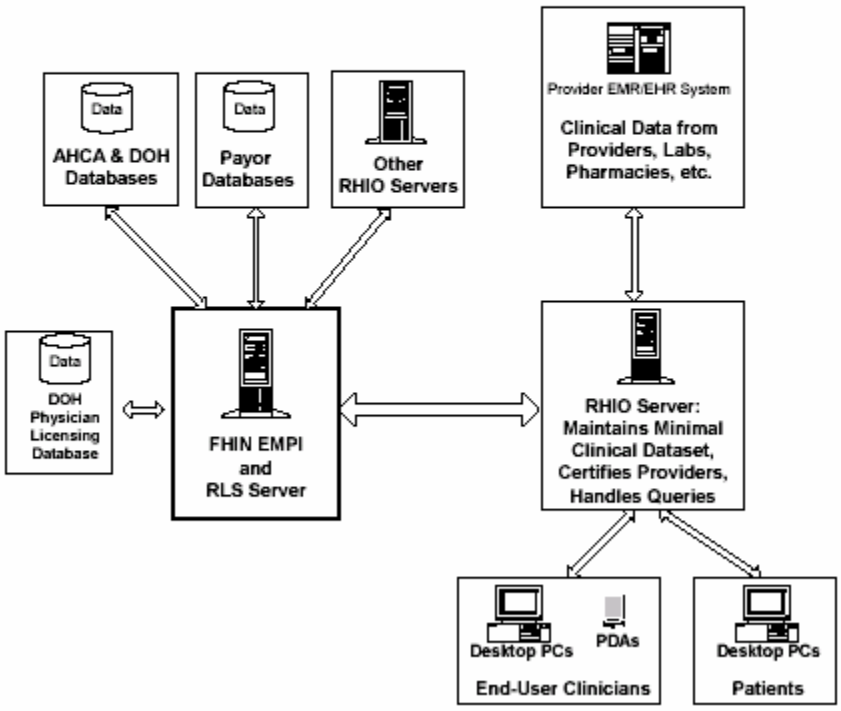
IV. Building the Florida Health Information Network

The FHIN is envisioned as a statewide health information infrastructure that will enable health care professionals to access a patient's medical records from any provider database connected to the network over a secure Internet connection. The FHIN represents a collaborative effort between the public and private sectors, state and local governments, RHIOs and health information exchanges, providers, employers, consumers, health plans and payors. The FHIN proposes to interconnect health care providers across Florida to facilitate the sharing of health care data without regard to where in the state the consumer resides or where the health care was delivered. The FHIN infrastructure will allow local RHIOs the greatest amount of flexibility in implementing their plans to integrate health care data in their communities.

- The FHIN infrastructure will be built around a central server that will maintain connectivity among RHIOs or other health information networks in the state.
- The interface between the statewide server and the regional servers will be based on web services standards and common Internet protocols for optimum interoperability.
- Building a standardized interface will enhance the portability and scalability of the FHIN, and of the RHIOs around the state.
- The FHIN server could also connect to Florida state agency health care databases, and to databases maintained by payors that cover provider-generated claims records for Florida patients.

- By making medical records available to providers, the FHIN will offer physicians relevai information on patients that covers diagnoses, procedures, operations and frequency c hospitalizations, among other information.

Figure 2. Model of the Florida Health Information Network



Master Patient Index

A common set of fields should be identified and used by all RHIOs for patient identification. These should include first and last names, phone number, date of birth, city or location of birth, or a personal identification number (PIN).

Minimal Clinical Dataset

The decision to implement a centralized, federated or mixed mode RHIO architecture should not be dictated by the FHIN. However, each RHIO should create a minimal clinical dataset of priority data fields culled from patient records, to be held on the RHIO server for immediate downloading to the local physician upon request.

- It is recommended that the State of Florida seriously consider the adoption of the continuity of care record, or a subset of the continuity of care record, as the basis for partially central storage in a mixed mode model. Standards for a minimal data set to be collected and displayed by RHIOs should be established by the FHIN to ensure interoperability across the state.
- The data set should be agreed upon by a panel consisting of various clinical and quality experts.
- The data set should be in accordance with harmonized CCR/CDA standards, and should take into account any data sets defined by through HHS, ONCHIT and AHIC.
- The data set will not be comprehensive and should be extensible by any RHIO.

IX FHIN Development Budget

FHIN Development Total Budget Estimate, 2006-2007

Total Budget	**$9,424,298**
Costs Associated with the FHIN, Inc.	**$2,576,898**
FHIN, Inc. Administrative Staff	$827,446
FHIN Technical Staff	$1,008,452
Technical Consultants - 1 Year Contract	$516,000
Travel	$75,000
Legal and Accounting Costs	$150,000
Costs Associated with Building the FHIN Technical Infrastructure	**$5,953,200**
Database Layer	$520,000
Application Layer	$69,000
Web Layer	$169,000
DMZ Firewalls	$69,000
Development and QA Server	$230,000
Workstations	$25,000
Backup	$50,000
Software	$390,000
Security	$350,000
Master Patient Index and Record Locator	$2,650,000
Internet	$381,200
State Database Integration and Data Exchange	$400,000
Web Portal Development	$650,000
Costs Associated with FHIN Outreach Projects	**$894,200**
FHIN Outreach - Rural Connectivity Demonstration Project	$104,200
FHIN Outreach - Public Campaign and Website	$300,000
FHIN Outreach - Practitioner Outreach & Training	$490,000